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# MDR-TB LINKAGES BETWEEN INPATIENT AND OUTPATIENT CARE IN KYRGYZSTAN, TAJIKISTAN, AND UZBEKISTAN

## AUGUST 27 – SEPTEMBER 18, 2011

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This trip report was produced for review by the United States Agency for International Development. It was prepared by Fabio Luelmo for the Quality Health Care Project in the Central Asian Republics.

The USAID Quality Health Care Project is a five-year program designed to improve the health of Central Asians by strengthening health care systems and services, particularly in the areas of HIV/AIDS and TB care and prevention. The project assists governments and communities to more effectively meet the needs of vulnerable populations, with the aim of increasing utilization of health services and improving health outcomes. The Quality Health Care Project is part of USAID's third objective of investing in people as part of the US Strategic Framework for Foreign Assistance.

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**Submitted to:** Leslie Perry  
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USAID Central Asia Regional Mission

# **MDR-TB LINKAGES BETWEEN INPATIENT AND OUTPATIENT CARE IN KYRGYZSTAN, TAJIKISTAN, AND UZBEKISTAN AUGUST 27 – SEPTEMBER 18, 2011**

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## List of abbreviations

AFB	Acid-fast Bacilli
AIDS	Acquired immunodeficiency syndrome
BCG	Vaccine Calmette Guerin
CAR	Central Asian Republics
DOT	Directly observed treatment intake
DOTS	WHO TB control strategy
DST	Drug Susceptibility Test
EQA	External quality assurance
GDF	Global Drug Facility
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GLC	Green Light Committee
HIV	Human Immunodeficiency Virus
IC	Infection control
ICRC	International Confederation of Red Cross/Red Crescent Societies
IUATLD	International Union against Tuberculosis and Lung Disease
KFW	German Development Bank
KNCV	Royal Netherlands TB Association
MDR-TB	Multi-Drug Resistant Tuberculosis
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MSF	Medecins Sans Frontieres
NRL	National TB Reference Laboratory
NTP	National Tuberculosis Program
NTBC	National TB Center
OPD	Outpatient department
PHC	Primary Health Care
PPD	Purified tuberculin test
QHCP	USAID Quality Health Care Project
TB	Tuberculosis
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WHO	World Health Organization

## Executive Summary and Recommendations

The republics of Central Asia have high incidence of tuberculosis and are among those with the highest burden of multi-drug resistant strains. USAID has launched a new project to support these countries to improve the quality of health care delivery, with special attention to TB and HIV: the Quality Health Care Project (QHCP). The Project is implemented by Abt Associates, Project HOPE and a consortium of other agencies. A consultant was asked to review the situation of MDR-TB and the country diagnostic and clinical capacity and make recommendations to the USAID/QHCP on scaling-up MDR-TB treatment and the role of outpatient PHC. The present consultant report includes observations in three countries (Tajikistan, Kyrgyzstan and Uzbekistan) and conclusions and recommendations regarding priorities for QHCP for country support.

The Central Asian Republics have inherited the vertical, specialized and hospital-based system of the ex-Soviet Union. The system is expensive and limits access of the population to TB care. The NTP central units do not have the managerial capacity, focus on public health, independence from the specialized clinical centers, and resources to carry out their functions. In two of the countries the assignment of functions is unclear: in Uzbekistan between the DOTS Center and the TB Center and in Kyrgyzstan between the National TB Center and the GFATM implementation unit.

The national programs depend heavily on external assistance (mainly grants from the GFATM) for first and second line TB drugs, equipment, supplies and operations (monitoring, training and supervision). At the same time the limited national resources are used for ineffective interventions (BCG revaccination, PPD and X-ray screening of general population, hospitalization, prophylactic treatment post-cure, and TB sanatoria). In Kyrgyzstan a recent restructuring of the health system and in Tajikistan a reprogramming of hospital TB care can contribute to rationalize financing.

All countries lack an NTP central managerial unit, independent of the specialized TB institutions, to plan, monitor and supervise program activities and to ensure training, laboratory diagnosis and regular drug supplies. There is gradual progress in integration of TB care in the general health system and in PHC, facilitated by reorganization of hospitals (Uzbekistan) and health sector reform (Kyrgyzstan). All countries have integrated identification of suspects by microscopy in PHC facilities.

Diagnosis of smear negative persons is mainly radiological and clinical resulting in over-diagnosis, particularly in previously treated patients. The specialists do not wait for the results of initial cultures before diagnosis, so a large part of the culture overload of central laboratories has no practical benefit. In pilot areas the quality of diagnosis is much better. There are still norms (prikazes) and ineffective practices such as mass X-ray screening, treatment of TB patients already cured and long hospitalization. Treatment regimens are in general consistent with international recommendations. Hospitalization is the rule, particularly for smear positive and for MDR patients; but also for non-infectious PTB, EP and children that do not need hospitalization. Ambulatory treatment is not well organized to facilitate DOT to the patient.

MDR-TB prevention is poor: the system is still creating MDR-TB by irregular or insufficient supply of FLD (mainly in Uzbekistan), availability of TB drugs over the counter in the private market, purchase of local drugs of unproven quality and sometimes past the expiration date, self-administered treatment. There is very little IC at all levels, but especially in the outpatient facilities that receive undiagnosed new or re-treatment patient.

MDR-TB diagnosis and treatment have expanded in all countries. The consistent support of GLC through lower drug costs and regular advisory visits that monitor the implementation of recommendations and the funding from GFATM are crucial. The main constraint for treatment of MDR-TB is the regular availability of

SLD. The countries depend fully on external grants, mainly the GFATM which is not a guaranteed source of finance as proposals may be accepted or not. Availability of beds for MDR-TB patients is not a major constraint, because there are many hospital beds unnecessarily used for susceptible TB. Coordination of activities among the multiple agencies providing technical assistance and with the NTPs is insufficient.

### **Recommendations for QHCP at regional level**

1. In coordination with other partners providing technical assistance to the TB programs, develop and implement an ACSM strategy to promote that the national health authorities:
  - Establish a NTP managerial unit, independent of the specialized TB institutions, to plan, monitor and supervise program activities
  - Eliminate obsolete prikazes and guidelines
  - Ban TB sales of over the counter drugs in private pharmacies.
2. Support NTPs to improve detection of the main sources of infection by the PHC system, by:
  - Piloting and expanding non-medical (nurse or administrative staff) detection of suspects in adults attending PHC facilities for any reason
  - Using the number examined by microscopy in the PHC facilities and positivity as indicators of expansion of case detection
  - Ensuring that all smear positive cases detected are registered for appropriate treatment
  - Improving the system of external quality assurance (EQA) of microscopy
3. Support the implementation of rapid methods (GeneXpert) to confirm TB diagnosis and to detect resistance to rifampicin (MDR) so susceptible patients can be treated immediately by PHC, including:
  - Establishing strict guidelines to use the method
  - Revising the clinical algorithms and writing standard operating procedures
  - Monitoring the results with appropriate indicators and the impact on quality of diagnosis
4. Support planning, distribution and warehousing of TB drugs, in particular SLD, including:
  - Ensuring reserve stocks
  - Promoting alternative sources of funding for TB drugs, both external and national
5. Improve access to ambulatory treatment, by:
  - Piloting, documenting and disseminating experience with DOT by the PHC system
  - Testing expansion of DOT through the community or family members, as an extension of the health facilities and patient-linked
  - Developing standard operating procedures and guides appropriate for PHC staff
6. Support NTP staff, the specialized institutions and PHC staff to improve the quality and use of information by:
  - Identifying and analyzing discrepancies in the data
  - Developing protocols and supporting operational research for action
  - Prioritizing short-term operational indicators for rapid corrective action, such as the smear and culture conversion rate at 6 months for MDR-TB cases.
7. Improve coordination among the technical assistance partners and with the NTPs, by:
  - Regular (monthly) meetings with established agendas including points for decision and action, defining responsibilities and follow-up of results



- Document and disseminate pilot area experiences for replication and adoption by the NTP if successful

Supporting visits by selected national staff (NTP or Ministries) to model integrated TB control programs to promote adoption of international standards of care. Selected QHCP staff could also benefit from observing these programs, in joint visits. Model programs follow the DOTS strategy (in which political commitment includes government funding, a national managerial unit and internationally recommended technical and operational standards), give priority to detection and cure of the main sources of infection, provide diagnosis and treatment throughout the general public health system free of charge for the TB patients, and monitor the results for action. Some countries have maintained these for many years and achieved substantial reduction of TB (Chile, Cuba, Peru); other programs have more recent implementation (India, China). Some countries in Africa have good programs but are not appropriate models for CAR because of their different stages of development and very high HIV infection (Tanzania, Malawi).

## Introduction

The republics of Central Asia have high incidence of tuberculosis and are among those with the highest burden of multi-drug resistant strains (MDR-TB). USAID has launched a new project to support these countries to improve the quality of health care delivery, with special attention to TB and HIV: the Quality Health Care Project (QHCP). The Project is implemented by Abt Associates, Project HOPE and a consortium of other agencies.

In TB, the project aims to help integrate delivery of care into the general health system, including the PHC and the vertical, specialized TB system. All countries are starting implementation of treatment of MDR-TB cases using second line drugs, supported by funding from the GFATM and with technical guidance from WHO, GDF and the GLC. A new diagnostic technology, the automated molecular test GeneXpert is being adopted by the countries and will facilitate confirmation of the TB diagnosis at PHC level and rapid detection of resistance to the most effective drug, rifampicin. The introduction of this technology will increase the number of MDR-TB cases detected and present challenges to the capacity of the national programs to treat them.

A consultant was asked to review the situation of MDR-TB and the country diagnostic and clinical capacity and make recommendations to the USAID/QHCP on scaling-up MDR-TB treatment and the role of outpatient / PHC (see terms of reference in Annex I). The main problem in CAR and other countries in the ex-soviet Union is the continuing creation of MDR-TB, so just treating some of the MDR-cases will not reduce the burden and the risk of new infections to the community. Therefore the consultant also evaluated the national capacity to prevent MDR-TB, including the capacity to detect, diagnose and treat infectious TB and MDR-TB cases; the capacity and use of TB laboratories; infection control and management of drug supplies. The present consultant report includes observations in three countries (Tajikistan, population 7 million; Kyrgyzstan, population 5 million and Uzbekistan, population 27 million); and conclusions and recommendations regarding priorities for QHCP for country support and the use of practical progress indicators.

## TB in CAR countries

The countries visited have high TB incidence and mortality. The WHO-estimated incidence of new and relapse cases for 2009 was 159 per 100 000 in Kyrgyzstan (8 700 cases), 202 per 100 000 in Tajikistan (14 000 cases) and 128 per 100 000 in Uzbekistan (35 000 cases). The estimated TB mortality excluding HIV was respectively 22, 48 and 19 per 100 000; a total of nearly 10 000 deaths per year.

The tuberculosis case notification of new and relapse cases (Table I) appears diminishing in Kyrgyzstan. There is a large reduction in new and relapse cases reported in 2010, due to the exclusion of retreatment cases with insufficient data for classification. Many of these cases do not have laboratory confirmation. Data from Uzbekistan present annual variations that may be due to the recording system. Tajikistan is the only country that has improved case detection activities, with an increase of 34% in the number of suspects examined by sputum microscopy from 2008 to 2010, and a corresponding increase of 4% in the number of smear positive cases.

Table I  
Reported pulmonary TB incidence in CAR countries, new plus relapses and new smear positive, 2005-2009

	Tajikistan	Kyrgyzstan	Uzbekistan
--	------------	------------	------------

	New/Rel.	New S+	New/Rel.	New S+	New/Rel.	New S+
2005	5460	1745	6329	1972	21513	5695
2006	5362	2051	6174	1833	23900	7211
2007	6297	2228	6098	1720	19779	6326
2008	6396	2057	6628	1712	17040	5117
2009	6125	1972	5765	1609	17540	4959
2010	6347 <sup>1</sup>	2290 <sup>1</sup>	5510 <sup>2</sup>		11446 <sup>3</sup>	4711 <sup>3</sup>

Source: Global TB Report, WHO 2010

<sup>1</sup> Source: GLC monitoring report, April 2011

<sup>2</sup> Source: Analysis of Restructuring TB Hospitals/Departments in Kyrgyzstan, 2011

<sup>3</sup> Source: GFATM PIU, Uzbekistan – NTP data reported to WHO.

The proportion of MDR-TB cases is very high in new and previously treated cases (Table 2). Given these estimates, based in studies of prevalence of MDR with standard WHO protocols and supported by international reference laboratories, the proportion of failures to first line drugs in cohorts of new patients (6-7%) and in re-treatments (7-10%) is inconsistent and cast doubts on the quality of data for cohort outcomes. Apparently the reasons for this inconsistency have not been analyzed.

Table 2

Estimated MDR TB incidence in new and retreatment cases, number of cases confirmed and number that started SLD treatment in CAR countries, 2009.

	Tajikistan	Kyrgyzstan	Uzbekistan
Estimated MDR prevalence in new cases %	17	13	14
Estimated MDR prevalence in re-treatments, %	62	42	50
Estimated incidence (2008)	4000	1400	8700
Estimated among the cases notified in 2009	1020	800	2900
Tested in 2009	1413	1930	1303
% tested	19	30	6
Confirmed MDR	319	785	654
Started SLD treatment	52	545	464

Source: [www.who.int/tb/data](http://www.who.int/tb/data), August 6, 2011

## TB control in CAR countries

### Organization and finance

The countries in CAR have inherited the vertical, specialized and hospital-based system of the ex-Soviet Union. The system is expensive and limits access of the population to TB care. The three countries visited are heavily dependent on external grants, mostly from the GFATM. As most GFATM proposals are prepared by the TB specialists, there is little emphasis on delivery of care by the PHC facilities or the required system of training and supervision to integrate diagnosis and treatment. In addition, hospital budgets are calculated on the basis of the number of beds, discouraging ambulatory treatment: this is now changing with the re-structuring of the health system. The high prevalence of MDR in new and in re-treatment cases and the need for infection control are arguments to block standard ambulatory treatment by family doctors from the PHC facilities; but MDR can be detected with a rapid test (such as GeneXpert) and the risk of infection is higher from untreated patients, once the patients starts therapy the risk diminishes rapidly. Infection control in general health facilities is essential because of the undiagnosed infectious cases attending for any reason.

The NTP central units, the basis to implement a efficient DOTS strategy and a part of political commitment, do not have the managerial capacity, focus on public health, independence from the clinical institutes and resources to carry out their advisory and supervision functions and the coordination of external assistance. In two of the countries the assignment of functions is unclear: in Uzbekistan between the DOTS Center and the TB institute and in Kyrgyzstan between the National TB Center and the GF implementation unit.

The national programs depend heavily on external assistance (mainly grants from the GFATM) for TB drugs, equipment, supplies and operations (monitoring, training and supervision). At the same time the limited national resources are used for ineffective interventions (BCG revaccination, PPD and X-ray screening of general population, hospitalization, prophylactic treatment post-cure, and TB sanatoria). In Kyrgyzstan a restructuring of the health system and in Tajikistan a reprogramming of hospital TB care can contribute to rationalize financing, but ministerial level decisions will be necessary to change wrong policies and practices such as mass X-ray screening, the sale of TB drugs in private pharmacies, hospitalization and treatment of already cured TB patients and ex-prisoners, hospital financing per number of TB beds, and BCG revaccination.

### Case detection

Formal adoption of the DOTS strategy resulted in expansion of identification of suspects with cough of long duration or radiographic lesions by the family doctors in the general health facilities. Suspects are requested sputum smear examination by microscopy and often culture, and they are referred to the TB specialists in the vertical system for diagnosis and indication of treatment. However the identifications of adults with cough is done only by the family doctor (clinician) and is not done for persons attending for other reasons. Thus the number of suspects examined by microscopy in all three countries is low (less than in India and ten times lower than in Peru). This results in diagnostic delays, infectious suspects attending PHC facilities several times, and continued transmission of susceptible and MDR-TB. Cases confirmed by microscopy at the PHC still require diagnostic confirmation by a specialist leading to delay, loss of patients and unnecessary hospitalization.

X-rays are used for detection at least five times more frequently than smear microscopy, and radiological screening of the general population is still done in spite of high cost and very low yield: Kyrgyzstan does 1 million X-ray examinations per year and about 100 000 smears for TB.

Most cultures are in solid media, requiring several weeks or months to provide a result; in general TB specialists do not wait for the result of culture for the decision and diagnose cases based on radiological signs and symptoms. Pulmonary cases with negative microscopy or without results are more frequently diagnosed than smear positive, infectious cases: in 2009 the proportion of pulmonary cases confirmed by microscopy in the three countries was 43% while the expected is over 60%. Only a small proportion of the smear negative cases are confirmed by culture. There is a significant proportion of re-treatments without laboratory confirmation (smear or culture), cases that according to WHO should be exceptional. There is a large proportion of extra-pulmonary TB (28% of the new reported cases in 2009). All observations indicate that the detection and clinical diagnosis need improvement.

## Treatment

Treatment regimens are in general compatible with international recommendations, with minor deviations. However in practice there are non-standard regimens and variations in dosages. A proportion of the patients in Uzbekistan are considered “non-DOTS”, meaning excluded from the standards. The majority of TB cases are hospitalized for the initial phase of treatment, and the provision of DOT for the outpatient period is not well organized in the most convenient way for the patient. Children with TB diagnosis (usually without confirmation) are hospitalized. All countries depend fully on international assistance for drug supplies, both first and second line. The GFATM is the main donor.

There is a large amount of information regarding the TB program organization and technical interventions in documents and reports from consultants, mainly from WHO, GDF, GLC and GFATM. The recommendations in general have variable priority to reduce TB. The national program data is collected and available but very little analyzed and used for decisions.

Several international partner organizations have supported the NTPs consistently for several years, but the NTPs do not make optimal use of technical support. An example of inappropriate priorities is that in spite of multiple warnings, Uzbekistan has not maintained a reserve stock of first line drugs and has patient supply interruptions. First and second line drugs can be obtained in private pharmacies over the counter; only Tajikistan is making an effort to ban their sale. Facilities can buy TB drugs without adequate quality controls in the local market. These weaknesses of the basic DOTS strategy are fertile ground to create and maintain a large pool of MDR-TB and chronic cases. Countries are in the process of revising the TB hospital network and banning sale of TB drugs (Tajikistan) and the system to finance health expenditures (Kyrgyzstan); this will facilitate integration of TB service delivery to the population.

The reported outcome of treatment of new cases, based on data from cohort analysis of smear positive appears reasonable, probably too good given the high prevalence of MDR-TB (Table 3). Success rate is over 80% in the countries visited. However the quality of the information may depend on clinical practices and quality of registration (for instance possible exclusion of some “difficult” cases) and there are some differences from WHO definitions (for instance in Kyrgyzstan defaulters that return with positive smears are classified as failures). In Uzbekistan and Tajikistan the proportion of cases that completed treatment but did not have negative smears to confirm cure is high. Note that the failure rate with first line regimens in all countries is around 6%, too low for the estimated proportion of MDR in new cases (13% in Kyrgyzstan and 17% in Tajikistan). The discrepancy merits operational research to improve the estimated number of MDR patients to be treated each year.

Table 3  
Treatment outcome in new smear positive TB cases, CAR

Country	Year	% cured	% success	% dead	% failed *	% lost
Tajikistan	2005	74	83	4	6	7
	2006	80	85	5	5	5
	2007	78	83	5	6	7
	2008	76	83	4	7	6
Kyrgyzstan	2005	81	85	3	5	7
	2006	80	83	5	5	7
	2007	81	85	3	6	7
	2008	80	85	3	6	7
Uzbekistan	2005	72	81	6	6	8
	2006	73	81	6	6	7
	2007	72	79	7	6	8
	2008	75	81	6	6	7

Source: Global Tuberculosis Control. WHO, 2010

\* Note the discordance with the high prevalence of MDR in new TB cases in all countries

## Prevention of MDR-TB

The priorities to prevent MDR-TB are to:

1. Identify infectious TB (adults with cough, smear +) to reduce the exposure of contacts. This requires to identify suspects with cough, perform microscopy with EQA, register the smear positive cases, identify their previous history of treatment and decide if they are MDR or not. Except for the last point, all these activities could be carried out now by staff of the general PHC facilities. With the introduction of GeneXpert the last one will also be possible so the correct standard regimen can be initiated by PHC without intervention of a TB specialist. The indicators for this activity are number of suspects examined, positivity of the smear microscopy, and registration of all detected patients for treatment.
2. Identify culture positive PTB, which is less infectious but can be MDR. The priority is patients diagnosed clinically with pulmonary tuberculosis (following the algorithm, including a period of non-specific antibiotics and differential diagnosis with other diseases) and persons infected with HIV. Rapid tests such as GeneXpert can be used to confirm or disprove the clinical diagnosis, also in EP TB. The use of GeneXpert in this group will improve the quality and accelerate diagnosis; it should reduce the number of cases diagnosed without confirmation. The indicators are the proportion without laboratory confirmation among diagnosed PTB and the proportion of EP among all new cases.
3. Regular standard treatment with FLD of good quality, under DOT, with a minimum of failures and defaulters, and no partial changes in the regimens (addition of SLD) to avoid XDR.
4. Infection control, mainly in congregate settings where there may be exposure to undiagnosed, untreated PTB (such as the waiting rooms of outpatient PHC facilities); in hospitals treating TB and MDR-TB; and in laboratories involved in TB diagnosis.

Detection of suspects with long-duration cough is increasing in Tajikistan but not in Kyrgyzstan or Uzbekistan. The prevalence of smear microscopy positive infectious cases among adults consulting PHC health facilities is quite high, 8-10%. As the prevalence of MDR is over 10% in new TB patients, at least 1% of the adults attending general health care facilities and presenting cough over two weeks is a source of

MDR infection – this is valid for any facility, with or without active TB detection. Yet most facilities do not provide information to outpatients regarding the importance of cough, the screening with microscopy is still quite low, external quality of microscopy is insufficient and the microscopy indicator is not used for action.

QA drugs (GDF) are mixed with local purchase of unknown quality, and insufficient reserve stocks may result in interruption and partial regimens so the patient must buy some of the drugs. There were stock-outs in Uzbekistan in 2011, mainly due to lack of reserve stock and inappropriate use, and the problem has not been solved.

Infection control is poor in general. There is low information regarding the most efficient methods to prevent TB transmission (diagnosis and treatment, ventilation) and the most important areas to protect (laboratories performing culture, outpatient sections of general facilities, sputum collection sites). Of particular worry is the very high incidence of TB in staff of the national TB laboratory in Bishkek, which has totally inadequate infrastructure. Although some cases are expected from infections acquired in the community it is evident that the risk of transmission in the laboratory is high and that the conditions of the building do not permit appropriate adaptation. Construction of a new building (German donation) has been postponed repeatedly and the situation merits a political decision at the highest level.

Rapid molecular diagnostic methods for TB and for resistance to R (GeneXpert) are being introduced. The long delay in diagnosis using previous methods, in particular in solid media, encouraged the TB physicians to diagnose “active” TB through X-ray and clinical criteria. As a result large number of pulmonary new and previously treated patients are treated without laboratory confirmation (smear or culture), with probably high over-diagnosis. Over-diagnosis is also common in children and in EP TB. Besides wasting resources, this has as serious consequences for the patients and the family, particularly when the treatment protocols include hospitalization.

The introduction of rapid methods (molecular line-probe assays recommended by WHO) is a window of opportunity to increase the specificity of the TB diagnosis by physicians and the speed to recognize and treat MDR correctly. A major risk is the duplication of technologies that waste resources: external donors offer high-tech equipment, training and supplies for a limited time but the national government will be responsible for the maintenance, reagents and staffing in the future or will need permanent donors. That is the case in Tajikistan, with a central laboratory to be renewed and a modern hospital laboratory (German donation) with all the technology just built, but with unclear assignment of functions and sustainability of the required staff and supplies with national funds. At the moment it is difficult for governments to refuse donations and there are very limited budgets for the essential elements of TB control (TB drugs, laboratory supplies and program supervision).

Currently the countries are expanding the treatment of MDR cases. There is regular technical assistance from the GLC and GDF for procurement and drug management, from the GFATM for drug financing and from other organizations including QHCP and Project HOPE to improve drug distribution and storage. The countries use standard second line regimens. The initial phase is under hospitalization. In the continuation phase a relatively small number of patients so far have been transferred to ambulatory treatment, but this experience should be analyzed and expanded. The success rate is similar to other countries in the world (below 70%) and the default rates are high. The main problem is that ambulatory care DOT for MDR patients depends strongly on the system of DOT for first line drugs, and the countries have not developed local level systems of delivery to facilitate treatment for the patient, accompanied by the necessary supervision and monitoring. PHC is often reluctant to take care of TB patients (which for long time was restricted to specialized institutions) and TB hospitals tend to maintain TB cases as inpatients because it is simpler than organize and supervise the integrated treatment system and because it maintains the institutions.

## Treatment of MDR-TB

Treatment of MDR-TB is with standard regimens (a policy appropriate for this region) following WHO guidelines; with regular GLC monitoring and follow-up of the recommendations. The drugs are funded mainly by the GFATM and procured through GDF, with special prices with GLC approval. However it is possible to buy first and second line drugs in the local private market, in some cases this is done with local funding. TB drugs in the local market do not have quality assurance. Treatment of a patient may be done with drugs of different sources and quality assurance.

MDR-TB treatment is for 24 months, with hospitalization of over 6 months in specialized facilities. After sputum smear conversion, patients may be transferred to another hospital facility, and sometimes to a third one before changing to ambulatory treatment by PHC facilities. Thus inpatient treatment is very long.

Outpatient treatment is often self-administered, and expansion of provision of DOT through health workers, the community or family is not yet organized. There are a few pilot areas with fully ambulatory treatment; in particular the experience of MSF in the west of Uzbekistan is worth analysis and replication.

The outcomes of MDR treatment are comparable with other countries, with success of 60-70%. Treatment outcome is not a very useful indicator, as it is known too late: in Tajikistan most of the first GLC cohort is still on treatment. In Kyrgyzstan 25% of the patients treated since 2005 defaulted, 20% cured, 7% failed, 6% died and 40% are still on treatment.

## Technical assistance for TB control in CAR

There are multiple agencies and organizations providing technical assistance for TB in CAR (see Annex, persons interviewed). Several of the agencies and projects receive funding from the same origin. The capacity of the NTPs to coordinate the external support is very limited, and the inter-agency coordination is in general sporadic and concentrates in exchange of information and not on concrete joint activities. The NTPs are dependent on external funding for drugs (mainly GFATM), infrastructure and equipment; often also for training and supervision.

In general there is a very good set of documents providing recommendations to the NTPs, including reports by WHO, GDF, GLC; in addition there are national plans and agreements with the technical assistance agencies as a basis for implementation. However, many of the documents have multiple detailed technical and organizational recommendations for NTP actions without well defined priorities regarding their impact of TB. It is true that low national salaries are a barrier to increase TB service delivery, but increasing the salary specifically for staff working on TB will impede integration (in a PHC all staff is already exposed to TB infection, selecting some would exclude the rest from getting involved).

Kyrgyzstan and Uzbekistan had comprehensive WHO reviews of the TB program in 2010 with little impact; in part because the review reports were delayed (Kyrgyzstan nearly one year, Uzbekistan from December not yet available) and the recommendations were not actively followed-up. Program management policy and follow-up is either with TB institutes focused on



clinical and not public health goals, or divided among different institutions without clear responsibilities.

## USAID/QHCP - TB activities and opportunities

The QHCP planned support to TB control within Health Service Strengthening. The following points of the Roadmap present opportunities for effective interventions. Only the components of the QHCP which may improve interventions with higher impact on TB and MDR-TB transmission and that are cost-effective are commented below.

- Health policy: working groups, national strategies and legal framework.  
Changing outdated national policy requires ACSM to the highest decision level to consolidate a central unit responsible for TB program management and adoption of internationally recommended technical guidelines. Legal aspects include cancelling old prikazes, banning incorrect practices (BCG revaccination, mass screening, post-cure treatment and hospitalization) and banning over the counter sale of TB drugs. ACSM will be more effective if carried out by the consortium of technical assistance partners and would benefit from exposure of selected public health officers to model TB control programs integrated into PHC appropriate to CAR conditions (e.g. Peru, Cuba).
- Health financing (TB, HIV, MC, CVD).  
Health financing reform is required to reduce the incentives for hospital beds and allow transfer of activities to the PHC system; it is already under way in Kyrgyzstan and planned in Tajikistan. The elements that require secure financing in an integrated TB control program are TB drugs and laboratory diagnosis; and the management functions (planning, training, monitoring and supervision).
- Institutionalization for sustainability  
Within methods and tools the priority is to update technical and operational guidelines and develop standard operating procedures that allow PHC staff to detect suspects, fully diagnose infectious cases (smear positive), indicate and start treatment and ensure regular drug intake. At the moment the barriers are rules and practices requiring confirmation by TB specialists and the need to identify patients with MDR so the rest can be treated with FLD. The implementation of the GeneXpert presents an opportunity to change diagnostic procedures, including detection of MDR in smear positive, confirmation of smear negative and EP cases and integration of diagnosis and treatment in PHC. This will require modification of policy and guidelines as well as staff retraining.  
Regarding structure and relations the priority is a NTP managerial unit in each country, with responsibility for planning, training, supervising and monitoring program activities and with a public health approach. This unit should be part of the MOH and independent from the clinical TB institutions; it should have close coordination with the TB laboratory network, the PHC and specialized delivery systems, prison health system and other institutions providing TB care to patients, as well as with related programs such as HIV/AIDS. The unit is responsible also for ensuring regular drug supplies and for coordination with and among external partners, to obtain maximum benefits from external cooperation.
- Use of information (M&E, OR, Health information systems)  
Data collection systems for TB are well developed in the countries visited, and electronic systems are in process of implementation. However the use of information for action is poor at all levels. The

priority is to train staff to analyze the information, detect problems and carry out operational research to find causes and solutions. Evident examples of issues to study are:

- the discordance between low failure outcomes in cohorts of new and retreatment cases treated with FLD and the high prevalence of MDR in both groups,
- the discordance between the number of infectious cases detected by microscopy and the number reported as diagnosed and started on treatment (Are the same persons examined several times? Why? Are the patients lost or delayed for treatment by the system?)
- the proportion of suspects with prolonged cough among PHC consultation, to compare with routine detection; and their positivity to measure effectiveness.

Note that electronic systems facilitate data collection and processing, but tend to reduce analysis of quality of the data and to centralize analysis further from patient care units.

Other projects related to the USAID/QHCP are Dialogue on HIV/TB, TB CARE, Project management support (to CCM), CDC/CAP support, GFATM and WB/WHO.

## Findings

For each country visited the report includes TB and MDR-TB epidemiology, program structure, case detection, quality of diagnosis, treatment and outcomes, infection control, progress and risks, and priorities.

### Tajikistan

The WHO-estimated TB incidence in Tajikistan (population 7 million) is 14 000 cases, with a rate of 202 per 100 000. The estimated MDR-TB is 17% of the new cases and 62% of re-treatments, with a total annual incidence of 4000 and of 1400 among the cases reported.

The country is piloting a reform of the health services, with increased resources for laboratory and hospitals. The GFATM and USAID are the major donors; the PR of the R6/R8 GFATM grants is UNDP and a proposal for R11 is in preparation. There is no reform planned for the prison system. Major problems are an increase of the migrant population, fourfold increase of HIV prevalence, increase of MDR-TB, exodus of professionals and poverty.

The TB program is structured as a vertical, specialized system, and the Director of the TB Center is the head of the NTP. The government policy still supports the use of hospital beds for TB, but these were reduced from 3000 to 1800 by closing small facilities. However the PHC facilities carry out detection of suspects and ambulatory treatment in the continuation phase, supported by TB Dispensary or PHC physicians and auxiliary staff (feldshers). The government has decided joining the phthisiology and pneumonology specialties, this should facilitate improvement of differential diagnosis of lung diseases. National TB guidelines are reported as approved, but are not yet available, and guidelines for MDR-TB are still under discussion. The country is starting to implement PAL.

The current case detection rate estimate is 44%. The number of new and relapse cases has increased from 5460 in 2005 to 6347 in 2010. The number of suspects examined for diagnosis by the microscopy network is increasing, indicating faster identification of sources of infection (Table 4). Still, this number represents only 0.45% of the total population identified as TB suspects and examined in 2010, and it may include

duplication of persons examined in the same or different facilities due to the unnecessary practice of re-examining suspects already confirmed as infectious cases by the PHC microscopy. The smear positivity among TB pulmonary suspects examined was 9.6% in 2009 and 2010, indicating a substantial prevalence of infectious cases in the community, with a reduction from 2008.

Table 4  
TB case detection by sputum microscopy, Tajikistan 2008-2010

Year	Number of suspects	Smear positive	%
<b>2008</b>	30385	3749	12,3
<b>2009</b>	37169	3572	9,6
<b>2010</b>	40810	3905	9,6

Sputum smear microscopy positivity in the Dispensary visited was 12% in 1700 suspects examined in 2010 and 5% in 2000 suspects examined in 2011, showing improved detection and reduced prevalence of infectious sources.

There is a large proportion of extra-pulmonary cases (27%) and too high proportion of smear negative or smear not done among new pulmonary patients (47%). The proportion of smear (+) among new PTB diagnosed in prisons is 91% and in the pilot area in Shahrinov rayon 68%, a much better index of quality. The number of relapse cases reported nationally is very low (388 in 2010) and the number of “other retreatment” cases very high (over 1000), both smear positive (chronics?) and smear negative (radiological diagnosis of TB?), suggesting diagnostic criteria different from international recommendations.

Treatment may start in ambulatory care, supported by weekly meetings of DOT providers and contact tracing. All smear (+) patients are initially hospitalized.

MDR-TB management is still at the pilot stage, as SLD supply is the only limitation for expansion. The last GLC mission was in April 2011 and reported capacity to treat 800 MDR cases per year nationally, if SLD are available. In 2009 19% of the TB cases reported were tested for MDR, 319 were confirmed MDR and 52 patients started SLD treatment. 70 of the MDR cases currently on treatment are hospitalized, the rest are on ambulatory care. Changes in standard regimens because of toxicity or intolerance are discussed by a committee of specialists.

A new hospital with 80 beds donated by the German government has a high-tech laboratory including multiple methods for diagnosis. The central TB laboratory will be upgraded; the responsible officer for the central laboratory has transferred to the hospital lab. A risk for the NTP is that the functions of the central lab and the new hospital have not yet been defined, and that multiple technologies may be expanded and used haphazardly. This would require additional staff and expenses for reagents that the country cannot afford without external support.

Infection control is in general poor, both regarding the rapid identification and treatment of sources of infection and ventilation in congregate settings.

External support is offered by several agencies, in general with the same objectives and activities but differing in strengths and coverage. Coordination is weak, with exchange of information in quarterly meetings and informally. The secretary of the coordination group is currently staff from the QHCP.

The NTP uses standard data collection instruments and reports to WHO. However the information on the TB program is often discordant: the failure rates in cohorts of new cases are inconsistent with high levels of MDR-TB (cohort selection?); and the data reported in WHO publications has major differences with data in other publications (Table 3 of the MDR case management assessment, May 2011). These discordances should be studied through operational research and corrected by supervision.

### **Priorities for QHCP:**

- Supporting the NTP staff to develop a public health approach to TB control, including training in interpretation of the information, supervision and operational research for action.
- Defining the functions of the central and Macheton hospital laboratories and the rational use of diagnostic equipment and technology, to limit the costs in staff, training and reagents.
- Introduction of the GeneXpert technology, accompanied by revision of the diagnostic algorithms and development of SOP, including full treatment of all susceptible smear positive cases by PHC.
- Improving coordination of external support through regular monthly meetings on fixed dates (including NTP staff), with agenda including at least one or two points for decision and action.

### **Kyrgyzstan**

The 2009 WHO-estimated TB incidence in Kyrgyzstan (population 5 million) was 8700 cases, with a rate of 159 per 100 000. The current case detection rate estimate is 66% for all forms. The number of new and relapse cases reported decreased from 6329 in 2005 to 5510 in 2010 and the new pulmonary smear positive from 1972 in 2005 to 1609 in 2009. MDR-TB has a high prevalence, estimated at 13% in new cases and 42% in re-treatments. The estimated incidence is 1400 cases and 800 among the TB cases reported.

A restructuring of the health system in the country is in progress. TB control is still vertical, specialized, based on hospitalization and radiological examinations. The GFATM is the main donor (R2, 6 and 9); in the past year problems with grant implementation resulted in a brief interruption of disbursements, change to UNDP as principal recipient and designation of a Deputy Minister of Health as head of the NTP in lieu of the Director of the National Center of Phthisiology. The country cannot apply to Round 11 but has been allowed to present a proposal for TB control in prisons. Even if approved, this proposal would not supply sufficient funding for rapid expansion of SLD treatment.

Regarding quality of diagnosis, the proportion of smear positive cases among new cases in 2009 was only 29%, with a high proportion of smear negative (42%) and extra-pulmonary cases (29%); only 41% of the pulmonary cases were smear positive. This suggests over-diagnosis based on radiology and poor use of the laboratory (not performing repeated smears after non-specific therapy or waiting for culture results before diagnosis). The implementation of the GeneXpert can be a window of opportunity to change inadequate diagnostic practices. A priority group for the test would be the cases currently diagnosed on clinical/radiological basis (new, re-treatments and particularly children), which may result in unnecessary hospitalization and treatment.

The number of suspects examined for diagnosis by the microscopy network has not changed significantly from 2004 to 2009 and the positivity diminished gradually but is still quite high. In 2010 the number of suspects examined and smear positive detected fell drastically, suggesting operational reasons (Table 5). This number represents 0.4% of the total population identified as TB suspects and examined in 2009 and less in 2010. The proportion of suspects identified and examined by PHC facilities has diminished since 2007. These indicators all reflect insufficient detection of persons with cough by general health facilities, resulting in exposure of the community to infection, and poor use of the data for decisions. The average

daily workload per microscopy unit for case detection is less than two smears, so workload should not be a limiting factor.

Note that the laboratory network reported over 2600 smear positive suspects and only 1600 new cases were registered for treatment and reported; it is doubtful that the rest were registered as re-treatments. The discordance may be due in part to repeated microscopy in the same person, unnecessary and leading to treatment delay; it is an issue for operational research. Sputum smear microscopy in the network is reported to have EQA, but the methods are not appropriate: panel testing evaluates only reading, is known as a test (and the results obtained are not very good); reading of slides during supervision is impractical due to time constraints (a good sample of at least 20 slides would require a full day) and in any case supervision is not regularly carried out.

Table 5  
Suspects examined by sputum microscopy, Kyrgyzstan 2006-2010

Year	Nº suspects	Nº smear (+)	% smear (+)	Smear workload	% smears in PHC
2006	18218	2697	14.8	53716	70
2007	19039	2676	14.1	55685	77
2008	19552	2852	14.6	57305	70
2009	20746	2793	13.5	61040	68
2010	18506	2666	14.4	54919	58

Source: Central TB laboratory, Kyrgyzstan

A major issue of concern is the situation of the Central TB laboratory, functioning in an inadequate and very risky environment and without sufficient IC measures. Some improvements and modern equipment have been added, but the infrastructure itself cannot be corrected. A new laboratory, donated by KFW, has been promised for a long time (years) but construction has not yet been started. This is an issue for political decision at the highest level.

TB drugs are on sale in private pharmacies. NTP drugs are procured through GDF/IDA. Treatment with FLD is with initial hospitalization except in pilot areas. The cohort outcomes have a very low failure rate, incompatible with the high prevalence of MDR reported. The country has been approved by GLC for 1880 MDR-TB treatments in total, for an expected incidence of 800 among the cases reported. In 2009 785 cases were confirmed as MDR and 545 initiated treatment, so the only limitation to expansion would be the funding for SLD. However, a QHCP assessment of drug management in June 2011 showed that TB drugs of unknown quality are purchased with local funds in the private market, and there is no system to identify what drugs were used for each patient. These drugs also may have very short expiry date, so they can be used after expiration.

There are multiple organizations providing technical assistance to the NTP, but coordination is insufficient. The GLC carries out annual missions, the last one in July 2010, with valuable recommendations and follow-up. WHO carried out a program review in July-August 2010, but the delay of the report and the changes during that period reduced the impact of the recommendations. Coordination with the national authorities has been complicated by the changes in responsibility for the GFATM grant. With a Deputy Minister

responsible for the NTP it seems the right opportunity to institutionalize coordination, with a memorandum of understanding and mandatory monthly meetings of the partner organizations.

### **Priorities for QHCP:**

- Coordination of external assistance, mainly in ACSM to obtain a political decision and support to implement building of the new central laboratory
- Implementation of GeneXpert; definition of the priority groups and revision of clinical algorithms
- Increased funding for SLD, from national or national or external sources
- Systematic screening of suspects by microscopy, ensuring registration of the smear positive cases detected; and using the number examined by PHC microscopy as indicator of detection.
- Improve data analysis and promote operational research for action

### **Uzbekistan<sup>1</sup>**

The WHO-estimated TB incidence in Uzbekistan (population 27 million) is 35 000 cases, with a rate of 128 per 100 000. The estimated MDR-TB is 14% of the new cases and 50% of the re-treatments, with a total annual incidence of 8700 and of 2900 among the cases reported. The reported new smear positive cases have diminished since 2006, without major changes in case detection. The total new and relapse cases have also diminished substantially, but have large variations due to changes in the classification of a large group of re-treatments (many smear negative) as relapses or as “other” cases.

The TB program is vertical, specialized, and based on hospitalization and clinical/radiology diagnosis; practices surviving from the ex-Soviet Union. There is little technical information in local language or even in Russian about modern knowledge of TB epidemiology and control, and how a well-integrated program should function. The authorities welcome external funding but not the suggestions to make better use of national resources. Thus mass screening, diagnosis through x-rays without waiting for laboratory results, hospitalization and over-diagnosis in children and EP are common. The number of TB beds (used or empty) is excessive, partly because hospital funding depends on the number of beds.

There are major variations over the years in the number of cases reported, depending on the classification of re-treatments (mainly smear negative) as relapse or other cases. The real practices have not been studied but a major factor is over-diagnosis of re-treatment cases without laboratory confirmation. The main donor is the GFATM, implementing now Round 8 with the Republican DOTS Center as Principal Recipient. The country is preparing a proposal for Round 11, mainly focused on SLD for MDR. Implementation of electronic registers is planned; this may have undesirable consequences of hiding incorrect practices unless at the same time the central unit and a supervision system are established.

Detection of suspects is mainly done in PHC facilities, although about one third of the suspects attend directly TB dispensaries. PHC refers smear positive cases and smear negative cases with symptoms or signs suggesting TB to the vertical system, which often repeats the diagnostic procedures. The proportion of suspects detected is low, equivalent to about 0.5% of the total population (Table 6). This number may have substantial duplication as nearly 12 000 smear (+) cases were detected per year but less than 6 000 were registered for treatment as new and relapses.

Table 6  
Smear microscopy for TB diagnosis in suspects, Uzbekistan 2005-2010

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<sup>1</sup> There were no visits to health facilities or laboratories; the report is based on interviews and documentation.

Year	N° of suspects examined	N° of smear positive	% positive
2005	129 107	13 655	10.6
2006	147 692	13 257	9.0
2007	138 978	12 338	9.1
2008	152 648	12 910	8.5
2009	144 616	11 133	7.7
2010	145 637	11 787	8.1

Source: Laboratory network, data provided by GF PIU

The implementation of rapid tests (GeneXpert) can be an opportunity to improve the quality of diagnosis and accelerate treatment of infectious sources. The priority groups would be smear negative/smear not done, EP and children to reduce the number of over-diagnosis (suspects that have gone through the microscopy, clinical/radiological examination and non-specific treatment as per algorithms and have a tentative clinical diagnosis of active TB); smear positive to confirm TB and detect MDR to indicate the correct regimen; and HIV infected.

In 2010-2011 there were interruptions in supply of FLD up to the patient level, mainly due to the lack of a reserve drug stock for emergencies but also possible by use of FLD for patients outside of the national guidelines. The normal procurement is done through GDF, which recommends a reserve stock of 6-12 months. The problem has not yet been solved, and further interruptions are possible in 2012. This causes increase of MDR, which have to be treated at much higher cost and with less effective regimens.

In 2009 the NTP reported that 654 MDR-TB cases were detected and 464 initiated treatment. MSF has supported a DOTS and DOTS+ pilot area in Karakalpakstan (west of the country) for several years, based on PHC, ambulatory treatment, IC and treatment of MDR. There are about 700 cases of MDR on treatment. Problems identified include NTP governance, insufficient resources for SLD in the Ministry of Health, human resources and quality of data (manipulation to achieve formal targets).

As in the other countries, there is major discordance between the failure rate in cohorts with FLD and the high levels of MDR reported. This has not been analyzed or studied to improve quality.

External technical assistance is provided by several organizations. Project HOPE implements the TB component of the QHCP (as well as Dialogue TB/HIV and M&E) because Abt is not yet registered in the country. The country does not fully utilize the technical assistance offered and the coordination is insufficient. The Quality Health Care and MSF pilot projects can provide very useful experiences, which should be documented and disseminated rapidly for ACSM. The NTP management under the National specialized (clinical) institution is a barrier for a public health approach to TB control, this structure tends to look at its own procedures and be too optimistic about the reality in the country.

### **Priorities for QHCP:**

- ACSM to promote a political decision at Ministerial level establishing a NTP managerial unit and structure; and adopting international guidelines. Expand the pilot projects in PHC and exchange and document the experiences for ACSM.
- Implement regular coordination meetings of the technical assistance partners, with agendas including decisions for action and follow-up of commitments.

- Support systematic detection of suspects for microscopy (OR to measure real prevalence of cough >2 weeks in PHC, pilot non-medical screening for cough); expand microscopy EQA; implement rapid methods and revise the diagnostic algorithm.
- Support implementation of GeneXpert, including definition of priority groups and revision of clinical algorithms
- Support PHC DOT for FLD and MDR-TB (analyze and document pilots of MSF, QI)
- Use and teach practical indicators and promote OR to improve data quality and interpretation

## Conclusions

- The countries visited have high rates of TB and very high prevalence of MDR-TB. Tb incidence is stable or diminishing, but MDR is increasing due to continuing inadequate treatment practices (availability of TB drugs over the counter, inadequate organization to facilitate DOT for the patient, irregular FLD supply in one country)
- All countries lack an NTP central managerial unit, independent of the specialized TB institutions, to plan, monitor and supervise program activities and to ensure training, laboratory diagnosis and regular drug supplies.
- There is gradual progress in integration of TB care in the general health system and in PHC, facilitated by reorganization of hospitals (Uzbekistan) and health sector reform (Kyrgyzstan). All countries have integrated identification of suspects by microscopy in PHC facilities. However patients are referred to the specialized system for confirmation of diagnosis (even if smear positive) and routinely hospitalized.
- Detection of suspects in PHC is only done by the Family Physician, missing adults with infectious TB that attend for other reasons. The number of persons examined by microscopy for diagnosis and positivity is recorded but not used as indicator of case detection. Only in Tajikistan the number of suspects examined is increasing.
- The suspects with positive microscopy are not systematically registered as TB cases to be found and started on treatment. The number of these cases reported by the laboratory network is much more than the number of smear positive cases (new and re-treatments) reported by the program. This may be due to retesting in the specialized facility or to loss of patients that did not know the results or that defaulted before treatment. The issue has not been studied for corrective action.
- Microscopy seems of reasonable quality, based on available information. However the methods used for EQA are not the most effective (panels of smears are known as testing and they only check reading ability; re-reading slides during supervision visits is insufficient because the sample is too small NTP supervision is irregular or non-existent in some countries). Re-reading of a blind sample of smears by the laboratory at oblast level should be considered as best alternative, particularly in Kyrgyzstan and Uzbekistan.
- Diagnosis is based mainly on radiological and clinical basis, which results in over-diagnosis, particularly in previously treated patients. The specialists do not wait for the results of initial cultures before diagnosis, so a large part of the culture overload of central laboratories has no practical benefit. In pilot areas the quality of diagnosis is much better (68% smear positive among new PTB in Sharinov rayon versus 53% at national level in Tajikistan).
- There are still norms (prikazes) and ineffective practices such as mass X-ray screening, treatment of TB patients already cured, and long hospitalization. Obsolete perceptions are common among specialists and some Family physicians; for example that X-ray screening reduces transmission by preventing infectious sources and that nutrition and bed rest during short course treatment are major factors for cure. Access to modern information on TB epidemiology and control is very limited, mainly because of



language but also because professionals do not accept experience from other countries except Russia, and that is a poor model for TB control.

- Treatment regimens are in general consistent with international recommendations. Hospitalization is the rule, particularly for smear positive and for MDR patients; but also for non-infectious PTB, EP and children that do not need hospitalization. Ambulatory treatment is not well organized to facilitate DOT to the patient (observed by ANY trained and responsible person); as a result there are many patients on self-administered therapy. This is not so much a problem of selective drug intake, as the countries use FDC, but of undetected treatment interruptions and lack of microscopy controls at the end of treatment to ensure cure. Organization of community or family DOT as an extension of PHC treatment is crucial for MDR-TB, particularly as some drugs should be taken in two separate doses during the day.
- FLD supplies depend fully on external grants and there is no provision of national funding even for emergencies such as discontinuation of external support. In one country (Uzbekistan) the lack of a reserve stock has resulted in stock-outs even at patient level – an unacceptable situation when the country and donors are investing so much to diagnose and treat MDR.
- MDR-TB prevention is poor: the system is still creating MDR-TB by irregular or insufficient supply of FLD (mainly in Uzbekistan), availability of TB drugs over the counter in the private market, purchase of local drugs of unproven quality and sometimes past the limit date, self-administered treatment. There is very little IC at all levels, but especially in the outpatient facilities that receive undiagnosed new or re-treatment patients; and the infectious sources are identified late and delayed in treatment. Of particular concern is the central laboratory in Bishkek, with a very high risk of TB and MDR-TB infection for the staff and even for occasional visitors.
- MDR-TB diagnosis and treatment have expanded in all countries with the availability of funds for SLD and laboratory capacity (liquid culture, QA DST). Treatment is with standard regimens, appropriate for this region because of cost and simplicity compared with individualized treatment. The consistent support of GLC through lower drug costs and regular advisory visits that monitor the implementation of recommendations and the funding from the GFATM are crucial. The main constraint for treatment of MDR-TB is the regular availability of SLD. The countries depend fully on external grants, mainly the GFATM which is not a guaranteed source of finance as proposals may be accepted or not. Availability of beds for MDR-TB patients is not a major constraint, because there are many hospital beds unnecessarily used for susceptible TB, non-infectious TB (Negative PTB, EP and children) and even unconfirmed cases probably inactive.
- Fully ambulatory treatment of MDR-TB is an option, but must be secondary to fully ambulatory treatment of drug susceptible cases and organization of appropriate ambulatory DOT both for FLD and SLD. There are experiences in ambulatory care (MSF and QHCP QI activities) that are insufficiently documented and known.
- The estimation of funding needs for SLD for the next few years is difficult, because it depends on evolving international recommendations. Currently the duration of treatment is 24 months, up from 15-18 months in the past; however there are experiences with 9 months (Bangladesh<sup>2</sup>) and 12 months (IUATLD<sup>3</sup>) that may change future practices.
- Tuberculosis in prisons has much higher incidence rates and prevalence of MDR. The main problems are long delays for treatment due to security issues and loss of patients during transfers out of prison.
- Coordination of activities among the multiple agencies providing technical assistance and with the NTPs is insufficient. There is some exchange of information in irregular meetings and cooperation for specific projects (such as the preparation of proposals for Round II of the GFATM), but not enough to prepare action plans, assign responsibilities and monitor results or to advocate for political decisions required at high level (higher than the NTP or vertical TB system).

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<sup>2</sup> Van Deun et al. Am J Respir Crit Care Med. 2010 Sep 1;182(5):684-92)

<sup>3</sup> <http://www.theunion.org/index.php/en/newsroom/news>

## Recommendations for QHCP

1. In coordination with other partners providing technical assistance to the TB programs, develop and implement an ACSM strategy to promote that the national health authorities:
  - Establish a NTP managerial unit, independent of the specialized TB institutions, to plan, monitor and supervise program activities and to ensure training, laboratory diagnosis and regular drug supplies.
  - Eliminate obsolete prikazes and guidelines that are not cost effective or interfere with integration (mass screening, treatment of cured cases, hospitalization)
  - Ban TB sales of over the counter drugs in private pharmacies.
2. Support NTPs to improve detection of the main sources of infection by the PHC system, by:
  - Piloting and expanding non-medical (nurse or administrative staff) detection of suspects in adults attending PHC facilities for any reason
  - Using the number of persons examined by microscopy in the PHC facilities and the microscopy positivity as indicators of expansion of case detection
  - Ensuring that all smear positive cases detected are registered for appropriate treatment
  - Improving the systems of external quality assurance (EQA) of microscopy, piloting and expanding the re-reading of a sample of smears at oblast level
3. Support the implementation of rapid methods (GeneXpert) to confirm TB diagnosis and to detect resistance to rifampicin (MDR) so susceptible patients can be treated immediately by PHC, including:
  - Establishing strict guidelines to use the method (in smear positive to detect MDR, smear negative PTB and EP after tentative clinical diagnosis to confirm or reject TB, HIV infected persons)
  - Revising the clinical algorithms and writing standard operating procedures
  - Monitoring the results with appropriate indicators (number of PTB +, PTB - and EP tested for diagnosis, % and number of confirmed TB, % and number of identified MDR) and the impact on quality of diagnosis (% confirmed of the new and re-treatment PTB cases reported, number of EP reported)
4. Support planning, distribution and warehousing of TB drugs, in particular SLD, including:
  - Ensuring reserve stocks
  - Promoting alternative sources of funding for TB drugs, both external (GFATM and other potential donors) and internal (redirecting national funds now spent in hospitalization, mass screening and other ineffective practices)
5. Improve access to ambulatory treatment, by:
  - Piloting, documenting and disseminating experience with DOT by the PHC system
  - Testing expansion of DOT through the community or family members, as an extension of the health facilities and patient-linked (DOT providers chosen with the patient and trained)
  - Developing standard operating procedures and guides appropriate for PHC staff
6. Support NTP staff, the specialized institutions and PHC staff to improve the quality and use of information by:

- Identifying and analyzing discrepancies in the data (e.g. low failure rates with FLD versus high MDR prevalence, number of smear positive cases detected by microscopy versus number of reported new and relapse incidence)
  - Developing protocols and supporting operational research for action, such as finding the proportion of persons with cough over two weeks attending PHC for any reason and the % of smear (+) identified in PHC that was not registered for treatment
  - Prioritizing short-term operational indicators for rapid corrective action, such as the smear and culture conversion rate at 6 months for MDR-TB cases.
7. Improve coordination among the technical assistance partners and with the NTPs, by:
    - Regular (monthly) meetings with established agendas including points for decision and action, defining responsibilities and follow-up of results
    - Document and disseminate pilot area experiences for replication and adoption by the NTP if successful
  8. Supporting visits by selected national staff (NTP or Ministries) to model integrated TB control programs to promote adoption of international standards of care. Selected QHCP staff could also benefit from observing these programs, in joint visits. Model programs follow the DOTS strategy (in which political commitment includes government funding, a national managerial unit and internationally recommended technical and operational standards), give priority to detection and cure of the main sources of infection, provide diagnosis and treatment throughout the general public health system free of charge for the TB patients, and monitor the results for action. Some countries have maintained these conditions for many years and achieved substantial reduction of TB (Chile, Cuba, Peru); other programs have more recent implementation (India, China). Some countries in Africa have good programs but are not appropriate models for CAR because of their different stages of development and very high HIV infection (Tanzania, Malawi).

## Annexes

### I. Terms of reference

Consultation Visit: Dr. Fabio Luelmo, August 28 – September 18, 2011

#### 1. Background

The Central Asian Republics are among the countries with the highest burden of multidrug resistant tuberculosis in the world. While international inputs for TB control throughout the region are substantial the MDR situation has been rapidly worsening despite some signs of stabilization of the epidemic in each country.

USAID has launched new Quality Health Care Project implemented by Abt Associates, Project HOPE, and the consortium of other agencies. The project is a broad project which is focused on improving the Quality of care throughout the health system including the PHC, and vertical TB and HIV systems. USAID and the Quality project are working to improve integration and to work as a catalyst to rapidly move the region towards fully ambulatory care which will allow the TB system to focus more fully on MDR TB cases.

Note: In all countries of the region there are more MDR TB cases than there are available quality assured 2<sup>nd</sup> line drugs, adequate diagnostic capacity, and adequate clinical capacity to manage these cases.

#### 2. Goal and Approach

Review the current situation related to MDR TB including linkages between inpatient and outpatient/PHC treatment and make recommendations related to scaling-up MDR treatment and the role of outpatient/PHC treatment in Kyrgyzstan, Tajikistan, and Uzbekistan.

Assess current country capacity to expand out-patient treatment and provide recommendations on the way forward.

The review should include consideration of the current gap in capacity in each country to cover the current number of MDR patients and the availability of quality assured 2<sup>nd</sup> line drugs, diagnostic capacity, and clinical capacity to treat MDR cases.

#### 3. Required Products

- Debriefing USAID Regional Mission on initial findings and recommendations;
- Within 2 weeks upon completion of mission in the country, the consultant should prepare report with findings and recommendations

#### 4. Travel Agenda:

August 27 travel to Almaty

August 29<sup>th</sup> - Briefing Almaty, fly to Tajikistan

September 3<sup>rd</sup> - Fly to Kyrgyzstan

September 9<sup>th</sup> - 15<sup>th</sup>: Uzbekistan

September 15<sup>th</sup>: Travel to Kazakhstan

September 16<sup>th</sup>: Debriefing

Deliverables: Trip report with recommendation due within one week of the conclusion of the consultation visit.

## II. Persons interviewed and institutions visited

### CAR QHCP regional level

USAID/QHCP	Tom Mohr, Chief of Party Bakhtiyar Babamuradov, TB Director Kazakhstan Sheila O'Dougherty, Chief of Party Danielle S. Parsons, Regional HIV Manager
USAID/CAR	Bryn Sakagawa, Deputy Director, Office of Health and Education Arman Toktabayonov, Regional TB Advisor, Office of Health and Education

### Tajikistan

USAID/QHCP	Marian Sheridan, Country Director Roza Adilbekova, TB Director Tajikistan Bekhriz Salikhov, Quality improvement specialist Nassiba Alibaeva, Health financing specialist Anjir Elnazarova, Community action for health specialist
NTP	Octam Bobokhojaev, Director, Republican TB Prevention Center
Vakhdat TB center	Islomov Alisher, Director
Vakhdat polyclinic	Rakhmatullo Boev, PHC manager
Machiton TB Hospital	Rustamov Saidakhtam, Chief doctor Abdulloeva Mokhonim, Chief of laboratory Uladzimir Antonenka, advisor, Supranational Reference Laboratory
WHO	Sayokhat Khassanova, Country program coordinator TB, HIV and malaria
UNDP	Zumrad Maksumova, Tuberculosis grant manager, GFATM
Project HOPE	Timur Aptekar, Program manager / Country representative Mavlyuda Machmudova, Regional drug specialist Jamilya Ismoilova, Regional ACSM specialist
Dushambe TB Disp.	Imomnazarova Karomat, Deputy TB doctor
Dushambe H.Center #1	Safarov Aliakbar, Chief doctor Mirzoev Aziz, TB doctor Ibragimova Zazina, TB laboratory technician

### Kyrgyzstan

USAID/QHCP	Sara Feinstein, Country manager, Kyrgyzstan Rais R. Mazitov, TB director, Kyrgyzstan Amvar Beisembaev, TB specialist (Quality Improvement Project) Jibek Cholokova, CAH, ACSM specialist Jyldyz Ysykewa, Drug management specialist Barton Smith, TB specialist Gulmira Kalinambetova, Laboratory specialist Baktygul Akkazieva, TB patient satisfaction survey
NTP	Avtandil Sh. Alisherov, Director General, National TB Center
Project HOPE	David Kokiashvili, Country Director, Kyrgyzstan
TB/HIV Dialogue	Aida Estevesova, Program manager (Project HOPE)
Vorontsolvka	Jakyn Abdybaeva, Chief TB nurse, MDR-TB hospital (negative patients) Koshoeva Ainura, Deputy Chief doctor, National TB Institute

	PHC facility: Family doctor and TB nurse
Chui Oblast TB Center	Kyzalakova Zhaniyl, Deputy Director
	Minera Ibragimova, TB district curator
Noro-Prokork PHC	Natalia Kalmykova, Family Medicine Nurse
MSF	A. Jamil Fagirzai, Medical Coordinator, Kyrgyzstan
	Arnol Samiev, Deputy Medical Coordinator
UNDP/GFATM	Anna Chernyshova, Program Manager, Grant Implementation Unit
ICRC	David Tehitchuinadadze, Medical Delegate ICRC, Kyrgyzstan
KNCV (TB CARE)	Bakyt Myrzaliev, Country manager
WHO Kyrgyzstan	Saliya Karymbaeva, HIV/TB Programme Coordinator
USAID/CAR	Chynara Kamarli, Health Project Management Specialist

## **Uzbekistan**

USAID/QHCP	Dana Koneeva, Country Manager
	Shalva Gamtsemlidze, Country TB Director; TB/IC coordinator CAR
	Shakhnoz Saifiddinova, TB Quality Improvement specialist
Project HOPE	Abdunabi Kuchimov, Country Director
	Artur Niyazov, Country Program Coordinator
GFATM PIU/TB Gulnoz	Uzakova, Manager, Project Implementation Unit, GFATM
	Djakhaugir Buzurkhanov, Procurement specialist
	Ilufar Abdieva, Monitoring and evaluation specialist
	Mavluda Askarova, TB in prisons specialist
MSF	Andreas Bründer, Head of Mission
TB Center	Mirzagaleb Tillyashaykhov, Director, Republic Center of Phthisio- pulmonology
	Parpieva Nargiza, Chief Phthisiologist of TB Institute and Head of TB Faculty
USAID/CAR	Alisher Ishanov, Health Project Management Specialist

### **III. Documents consulted**

#### **QHCP/CAR**

USAID/QHCP Roadmap  
Performance and year 2 plan  
Quarterly Report September-December 2010  
GeneXpert September 10 Draft

#### **Tajikistan**

GLC Report, April 2011  
MDR case management assessment, May 2011

#### **Kyrgyzstan**

WHO Review on TB control, July-August 2010. Debriefing notes, August 2010  
WHO Review on TB control, July-August 2010. Final report, August 2011  
On-site Data Verification (OSDV) report for Kyrgyz Republic GFATM Round 6 Tuberculosis grant, July-September 2010. Summary of Findings and Recommendations. March 2011  
GDF Mission Report, April 2011  
Streamlining to Meet the Standards: An Evaluation of Warehousing in Kyrgyzstan. June 2011  
Impact Analysis of Restructuring TB Hospitals/Departments in Kyrgyzstan Kyrgyzstan, 2011  
SLD TB drugs: Management system assessment, June 2011  
GLC Report, July 2011

#### **Uzbekistan**

Summary debriefing to MOH, Review of National TB program, 3 December 2010  
Summary briefing on the GDF/GLC monitoring mission, May 2011  
Report to WHO for the Global TB Report, data for 2010

#### **Other**

Global TB Report. WHO, 2010  
WHO TB data: [www.who.int/tb/country/en/index.html](http://www.who.int/tb/country/en/index.html)  
TB Treatment Guidelines, 4<sup>th</sup> edition. WHO/HTM/TB/2009.420  
Multidrug and extensively drug-resistant TB (M/XDR-TB): 2010 global report on surveillance and response. WHO/HTM/TB/2010.3  
Multi-drug resistant tuberculosis (MDR-TB) indicators. WHO/HTM/TB/2010.11